SUPPORT FOR THE AMENDMENTS

Claims 1-7 have been canceled.

Claims 8 and 12 have been amended.

Claim 16 has been added.

The amendment to Claims 8 and 12 are supported by page 16, line 15 to page 17, line 17 and Table 1 on page 27 of the specification. The amendment of Claim 12 is supported by previously pending Claims 3 and 12.

No new matter has been added by the present amendment.

REMARKS

Claims 8-16 are pending in the present application.

At the outset, Applicants wish to thank Examiner Nagubandi and Examiner Barts for the helpful and courteous discussion with their undersigned representative on December 12, 2007. During this discussion several amendments, arguments, and data to address the outstanding rejections over the prior art were discussed. The content of this discussion is reflected in and expanded upon in the following remarks. Reconsideration of the outstanding rejections is requested.

The rejection of Claims 8-15 under 35 U.S.C. §103(a) over Hall et al in view of Brinker et al is respectfully traversed.

The present invention lays in the discovery that mesoporous silicas can be synthesized from silicate monomers by using anionic surfactants in conjunction with a basic silane of formula (1). The criticality of the combination of the anionic surfactant in conjunction with a basic silane of formula (1) is demonstrated in Table 1 (see comparison of Examples 6-12 to Comparative Example 4). Example 13 further illustrates the criticality of this combination.

As set forth in the specification, prior to the present invention cationic or nonionic surfactants were used as templates for template-directed synthesis of mesoporous silica materials. In fact, the specification states that mesoporous silicas could not be practically synthesized using anionic surfactant templates because silicate monomers have little affinity for the anionic surfactants. As a result, the silicate monomers are polymerized not on the boundary surface of the micelle or self-assembly of the anionic surfactants but in solvent bulk

under alkaline conditions resulting in an amorphous structure similar to the polymerizate under alkaline conditions without surfactants. (page 2, lines 8-18)

Hall et al is representative of this state of the technology. As stated above, the method disclosed by Hall et al relates to template-directed synthesis of mesoporous silica materials by using a cationic surfactant. Specifically, in the method disclosed by Hall et al at page 201, left column, lines 21-31 and page 202, left column, lines 11-16, varying molar ratios of tetraethoxysilane, phenyltriethoxysilane, and another orangotrialkoxysilane [$(RO)_3Si$—R', where R' = CH_2CHCH_2 (allyltrimethoxysilane), $(CH_2)_3NH_2$ (3-aminopropyltriethoxysilane), or $(CH_2)_3SH$ (3-mercaptopropyltriethoxysilane)] and a ***cationic*** surfactant (either CTAB or CTACl) are mixed.

At no point do Hall et al disclose or suggest use of a surfactant generally or suggest that their method may be performed using anything other than a cationic surfactant, much less an anionic surfactant. In an effort to compensate for the lack of a disclosure in Hall et al of an anionic surfactant, the Examiner cites Brinker et al. The Examiner alleges that Brinker et al "teach the process to form mesostructured films where anionic surfactants can be used in the process". At column 5, line 63 to column 6, line 3, Brinker et al do suggest that their process can be conducted using an anionic surfactant. However, Brinker et al fails to disclose how the skilled artisan can use an anionic surfactant in such a way to solve the problems that plagued such a method (see above). Therefore, Brinker et al does not actually solve the problem or offer a suggestion to solve the problem that existed in the art with template-directed synthesis of mesoporous silica materials using anionic surfactants.

Further, there would be no motivation or requisite expectation that substitution of the cationic surfactant in the method disclosed by Hall et al with an anionic surfactant would have solved the existing problem in the art. It was only the present inventors that realized

that the inclusion of a basic silane with an anionic surfactant can result in mesoporous silica complexes that are free from the problems that previously existed. Again, Applicants direct the Examiner's attention to the Examples of the present invention, which clearly establishes the criticality of the claimed invention. Specifically, the criticality of the combination of the anionic surfactant in conjunction with a basic silane of formula (1) is demonstrated in Table 1 (see comparison of Examples 6-12 to Comparative Example 4). Example 13 further illustrates the criticality of this combination.

In the Office Action mailed October 12, 2007, the Examiner alleges on page 2 that the criticality of the claimed invention is not evidenced by Table 1 on page 27 of the specification because the comparison to the same composition containing a cationic surfactant rather than an anionic surfactant is not provided. To address this criticism and to demonstrate the criticality of the claimed invention, Applicants **submit herewith** a Declaration under 37 C.F.R. §1.132 executed by Toshiyuki Yokoi ("the Yokoi Declaration"). In the Yokoi Declaration, Example 10 of the present application was repeated using dodecyltrimethylammonium bromide rather than SDS (see paragraph 7 of the Yokoi Declaration). As set forth in paragraph 9 of the Yokoi Declaration, the data appear in the Table in paragraph 8 of the Yokoi Declaration represents an unexpected result in that the combination of (A) an anionic surfactant, (B) silicate monomer, and (C) basic silane (i.e., the claimed invention) provides particularly sharp powder X-ray peaks for each of the complex, the outer shell, and the porous silica as compared to the combination of (1) a cationic surfactant, (2) silicate monomer, and (3) basic silane (representative of the cited art), which resulted in no precipitate formation. This result is not disclosed, suggested, or expected from the art of record in the above-identified application

Applicants also direct the Examiner's attention to Comparative Example 4 appearing in Table 1 on page 27 of the specification. This Comparative Example, which is similar to the technology of Brinker et al, further emphasizes the criticality of the claimed invention as no precipitate was observed under these conditions.

In addition to the foregoing, Applicants again refer to Gao et al (Chem. Mater. 2006, 18, 3904-3914), which further illustrates that benefits flowing from the claimed invention. Specifically, this reference further underscores the differences between the previously employed methods of cationic or nonionic surfactant-template directed mesoporous silica formation. In the Introduction, Gao et al detail the mechanistic differences between the templating mechanism from which the skilled artisan would readily appreciate that there would not be any motivation to substitute an anionic surfactant for a cationic or nonionic surfactant in a disclosure such as Hall et al and that there would not be any reasonable expectation of success based on the nascent disclosure of Brinker et al.

Finally, at page 3, lines 6-7 of the Office Action mailed October 12, 2007, the Examiner suggests that the mole ratios are critical and should be incorporated into the claims. Applicants have so amended the claims based on page 16, line 15 to page 17, line 17 and Table 1 on page 27 of the specification.

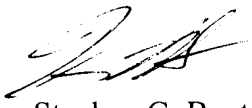
In view of the foregoing, Applicants submit that the presently claimed invention would not be obvious. Therefore, withdrawal of this ground of rejection is requested.

Applicants submit that the present application is now in condition for allowance.

Early notice to this effect is earnestly solicited.

Respectfully submitted,

OBLON, SPIVAK, McCLELLAND,
MAIER & NEUSTADT, P.C.



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